

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Michael J. Sailor
Serial No.: 10/589,741
Conf. No.: 9856
Filed: 8/16/2006
For: OPTICALLY ENCODED PARTICLES
WITH GREY SCALE SPECTRA
Art Unit: 2876
Examiner: Michael S. Andler

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF PRIOR INVENTION TO OVERCOME
SAILOR U.S. PUBLISHED APPLICATION WO 2003/067231 (37 C.F.R. §1.131)

PURPOSE OF DECLARATION

This Declaration is to establish completion of the invention as claimed in at least claim 18 of this application in the United States at a date prior to August 14, 2003, which is the date of publication of WO 2003/067231. The person making this Declaration is an inventor.

DECLARATION

1. I am a named inventor in the present patent application, and have personal knowledge of the facts stated herein.

2. I am Professor of Chemistry and Biochemistry and Bioengineering at the University of California, San Diego. I hold a B.S. degree in Chemistry from Harvey Mudd College, and M.S. and Ph.D. degrees in Chemistry from Northwestern University.

3. The invention as claimed in at least claim 18 was completed before August 14, 2003.

4. The invention claimed in the present application in at least claim 18 was completed and conducted in experiments that produced grey scale photonic particles prior to August 14, 2003.

5. Specifically, the present application describes experiments on pages 6-7 with the following paragraph "Experiments were conducted to demonstrate the invention. Grey scale samples were prepared by anodically etching p++ type, B-dope, (100) oriented silicon with <1mOhm-cm resistivity in a solution of 3:1 HF (48%, aq)/ethanol by volume. Computer generated anodic current waveforms consistent with the above explanations for grey scale coding were applied and a platinum mesh electrode was used as the counter electrode. Results were consistent with expectations." These experiments were completed on July 9, 2003. An excerpt from the invention disclosure that my co-inventor, Shawn Meade, and I signed on August 14, 2003 indicating the

reduction to practice by July 9, 2003 is shown below.

EVENTS	DATE	INDICATE THE WRITTEN RECORD (e.g., notebook, letter, email), IF ORAL DISCLOSURE, INDICATE TO WHOM.
1. Initial conception of the idea	8/28/03	Notebook #1 of Shuan Maede
2. First description of complete invention, oral or written	2/28/05	Notebook #1 of Shuan Maede
3. First successful demonstration (first actual reduction to practice)	10/6/03	Notebook # 1 of Shuan Maede
4. Has this work been: a. submitted for publication? N b. accepted for publication? N c. Published? N		
5. Have you presented this work at a conference or meeting? a. Did you submit an abstract? N b. Was abstract published? N c. Name of conference or meeting? N d. Did presentation include handouts? N		

G. INVENTORS' SIGNATURES

By signature below, I acknowledge my responsibilities and rights as roughly-estimating under the current University of California Patent Policy.

Shuan Maede

8/14/03

Inventor signature

Date

MSR

8/14/03

Inventor signature

Date

Inventor signature

Date

H. WITNESS - invention disclosed to and understood by:

Charles Lin

8/14/03

Witness signature

Date

Hachao Lin

Per witness name

6. The following data was taken from the reduction to practice that was completed on July 9, 2003 for samples with two spectral line radiometric grey scale coding.

```

I = 0.0746(273000y/99727x)

A1max = 0.080
A2max = 0.040

Aemo = 0.015

A_s = 1.0
A_g = 0.00

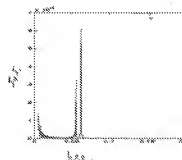
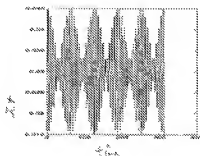
A1 = (A1max - A1emo)/2
A2 = (A2max - A2emo)/2

y1 = A1 * (cos(2 * pi * 1.57y) + 1) + Aemo;
y2 = A2 * (cos(2 * pi * 1.57x) + 1) + Aemo;

y = y1 + y2/2;
figure(1)
subplot(1,2,1)
plot(x,y)

%FFT
Y = fft(2000000);
Pyy = 0.0001 * Y * conj(Y) / 2000000;
f = 1000/(2 * 0.01) / 2000000;
subplot(1,2,2)
plot(f,Pyy(1:2081)/2)

```



Sample	wt	A1max	A2max	L1	L2	L3	L4	A1/A2	L1/L2	L1/L3
015_14_1	122	45	45	872.6	874.88	884	2820	1	0.87	0.937168
015_17_1	125	45	45	850.83	868.75	2747	2830	1.055	0.804697	0.864697
015_18_1	123	45	45	845.18	879.87	2242	2890	1.2697	0.674686	0.54217
015_19_1	124	45	45	892.35	860.07	848	2890	1.06	0.818032	0.818032
015_19_1	127	45	45	845.18	879.87	2242	2890	1.07	0.818032	0.818032
015_20_1	128	45	45	872.6	874.88	2410	1888	2	1.84	0.334667

7. The following data was taken from the reduction to practice that was completed on July 9, 2003 for samples with ten spectral line radiometric grey scale coding.

```
%Standard sine components
y1 = A1 * [sin(0, 1*pi + 360*deg) + 1] = A1sin(0);
y2 = A2 * [sin(0, 2*pi + 360*deg) + 1] = A2sin(0);
y3 = A3 * [sin(0, 3*pi + 360*deg) + 1] = A3sin(0);
y4 = A4 * [sin(0, 4*pi + 360*deg) + 1] = A4sin(0);
y5 = A5 * [sin(0, 5*pi + 360*deg) + 1] = A5sin(0);
y6 = A6 * [sin(0, 6*pi + 360*deg) + 1] = A6sin(0);
y7 = A7 * [sin(0, 7*pi + 360*deg) + 1] = A7sin(0);
y8 = A8 * [sin(0, 8*pi + 360*deg) + 1] = A8sin(0);
y9 = A9 * [sin(0, 9*pi + 360*deg) + 1] = A9sin(0);
y10 = A10 * [sin(0, 10*pi + 360*deg) + 1] = A10sin(0);

% Composite Waveforms (Average of all sine components)
y = y1 + y2 + y3 + y4 + y5 + y6 + y7 + y8 + y9 + y10/10;

figure(2)
plot(y);

%File Saving Protocol, generates 10 column vector text file
h = fopen('sig2003.txt','w');
for i = 1:10000
    fprintf(h,'%8.4f\n',y(i));
end
fclose(h);

%FFT
N = 10000; %Number of samples
P = fft(y,N)/N; %FFT of signal
f = 1/(10000) * (0:N-1); %Frequency in Hz
figure(3)
plot(f,P); %Plot of magnitude spectrum
```

Ten Spectral Line Waveform Parameters

Amplitude (line value)

below:

Amplitude = 0.02

f₁, f₂ to f₁₀ = 2.0 to 20.0 Hz, respectively, with 0.1 spacing

phase offset = 3.68 pi

Waveform	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	Avg
Waveform	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Amplitude	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phase	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Frequency	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
Phase offset	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68	3.68

8. As a person signing below, I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under 18 U.S.C. §1001, and that such willful statements may jeopardize the validity of this application or any patent issued thereon.

Declarant's Signature:



Michael J. Sailor

Date:

Friday, January 7, 2011

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Citizenship:

USA